AMENDMENT NO. 1

TO

REQUEST FOR PROPOSAL NO. RDO-3-33457-00

ZERO ENERGY HOMES (ZEH) ENERGY SUPPLY SYSTEMS INTEGRATION

1. **Question**: How many projects on this subject were funded by NREL last year and what was their value?

Answer: NREL did not fund any projects under "Zero Energy Homes (ZEH) Energy Supply Systems Integration" last year.

2. **Question**: On page 2 of the program description, you define net zero energy as "…the construction of buildings that so successfully integrate efficiency and renewable energy generation that they have a zero-net need for off-site energy on an annual basis." On what basis will you measure "off-site energy" (in dollars? Or Btus?)?

Answer: The Project Description section on page 2 of the Request for Proposals states: *"The Department of Energy's (DOE) Building Technologies Program has adopted the long-term goal of creating marketable buildings that produce all the energy that they use on an annual basis – Zero Energy Buildings."* The Background section on page 1 of Appendix A – Statement of Work states *"The process will then evolve to the construction of buildings that so successfully integrate efficiency and renewable energy generation that they have a zero-net need for off-site energy on an annual basis."* The Zero Energy Buildings strategy recognizes that to achieve the long-term goal of creating marketable buildings that produce all the energy that they use on an annual basis, an evolution of the building construction marketplace is required. One possible scenario for that evolution is that "net zero energy cost" buildings (where off-site energy is measured in monetary units) will be marketable before "net zero energy" buildings (where off-site energy is measured in energy units) are actually marketable. This evolution strategy for Zero Energy Homes (ZEH) is reflected in the underlined words found in the following sentence from the Objective section of Appendix A – Statement of Work: *"A primary objective of this project – organized into Phases – is to begin development of residential building-integrated products that incorporate the onsite generation of solar electric and solar thermal energy – products <u>on the path</u> to producing 100% of the ZEH's electric needs, 100% of its hot water needs and 100% of its space conditioning needs."*

3. **Question**: On page 2 of the Statement of Work in Appendix A, you state: "Of course, this Zero energy Home (ZEH) must reduce traditional energy use by 50-70% compared to the typical U.S. house today." Does this mean that consumption must be reduced by this amount and the remainder on an annual basis made up by renewable energy production on-site? Appliance energy use is growing as people put more and more appliances in their houses. How do we normalize for this?

Answer: The question is correct in its stated understanding of the sentence found in the Objective section of Appendix A – Statement of Work: *"Of course, this Zero Energy Home (ZEH) must reduce traditional energy use by 50 – 70% compared to the typical U.S. house today. "* In order to achieve the long-term goal of creating marketable buildings that produce all the energy that they use on an annual basis, the energy consumption of a typical U.S. house today must be reduced by approximately one-half to two-thirds (50 – 70%), with the remaining one-third to one-half (30 – 50%) to be made up by on-site renewable energy generation. Since this sentence addresses the traditional energy use of a typical U.S. house today, appliance energy use should be normalized in the same manner as heating and cooling, water heating, and lighting energy use are normalized for a typical U.S. house. Should you need it, a good source for this type of information is the "2002 Buildings Energy Databook" at http://buildingsdatabook.eren.doe.gov/.

4. **Question**: In what way can National Laboratories participate in the Solicitation "Zero Energy Homes (ZEH) Energy Supply Systems Integration"?

Answer: Applications submitted by, or on behalf of: (1) a Federal agency; (2) a Federally Funded Research and Development Center (FFRDC), or (3) a Department of Energy (DOE) Management and Operating (M&O) contractor will not be eligible for an award under this solicitation. However, these organizations may be proposed as team members subject to the following guidelines.

a. For DOE M&O contractors, the proposed use of such entity must be authorized in writing by the DOE Contracting Officer or authorized designee responsible for managing the M&O Contractor. The DOE Contracting Officer responsible for managing the M&O Contractor must determine that performance by the M&O contractor: (1) is consistent with or complementary to DOE missions and the missions of the facility to which the work is to be assigned; (2) will not adversely impact execution of assigned programs of the facility; (3) will not place the facility in direct competition with the domestic private sector; and (4) will not create a detrimental future burden on DOE resources. DOE will make award to the applicant for the applicant's portion of the effort. For the M&O effort, DOE shall fund the work, in whole or in part, through a DOE field work proposal to the M&O contractor. If DOE funds a portion of the M&O effort, then the Recipient is responsible for funding the remaining portion of the effort through a Cooperative Research &Development Agreement (CRADA) or a service agreement utilizing their own funds.

b. For FFRDC contractors (other than a DOE M&O contractor), the proposed use of such entity must be consistent with the FFRDC's authority under its contract with the cognizant Federal agency and such work must not place the FFRDC in direct competition with the private sector. DOE shall fund the FFRDC work through an interagency agreement with the cognizant Federal agency.

c. For Federal agencies, the proposed effort must not place the agency in direct competition with the private sector. DOE shall fund the other agency work through an interagency agreement.

d. An applicant's cost sharing requirement shall be based on the total cost of the project, including the applicant's and the Federal agency, FFRDC and M&O's portions of the effort.

e. The estimated total cost of the Federal agency, FFRDC or M&O contractor(s) work, in the aggregate, shall not exceed 50 percent of the total estimated project cost nor shall any sub-level participant or team member singly or in the aggregate have a percentage of the total estimated project costs that is in excess of the Prime Recipient's.

5. **Questio**n: How is ATTACHMENT I filled out in respect to labor rates?

Answer: Labor rates should be proposed to include the base rate, overhead rates and the resulting fully loaded rate. The Offeror should use the labor categories provided. The labor rate categories are provided to facilitate price competition for NREL's proposal evaluation.

6. **Question**: Out of the 12 pages how many attachments and resumes can be sent?

Answer: There is no limitation for attachments and resumes.

7. **Question**: What is an attachment? Do attachments include quotes, drawings, patent information and pictures?

Answer: An attachment is a response to the solicitation in addition to the technical proposal. Attachments may include drawings, patent information, and pictures. Typically quotes are supporting documentation for the price proposal.

8. **Question**: Can the proposal total cost apply to all Phases I through IV?

Answer: No. A price proposal is required for the phase being proposed. Proposed labor rates are required for the initial proposed phase through final proposed phase. If the offeror's proposal is selected for negotiation and award, a final deliverable will be the necessary price and technical proposal for the next sequential Phase. Based on the merits of the proposal, NREL will determine whether or not to authorize the next phase. In addition, award of future Phases will depend upon: (1) availability of funds; and (2) future needs of the Zero Energy Buildings Sub-Program.

9. **Question**: Can the proposal accommodate Phase I through IV with the total cost being higher?

Answer: No. The offeror shall propose an initial Phase that can begin with any of the four phases. A final deliverable for the proposed Phase will be the necessary price and technical proposal for the new sequential Phase. Based on the merits of the proposal, NREL will determine whether or not to authorize the next phase. In addition, award of future Phases will depend upon: (1) availability of funds; and (2) future needs of the Zero Energy Buildings Sub-Program. Labor Rates should be proposed for each of the phases.

10. **Question**: Can the ATTACHMENTS be in eligible handprint?

Answer: Yes.

11. **Question**: Does the INDEX TO SUBCONTRACTOR SCHEDULE need to be completed and sent with proposal?

Answer: No. It is provided as an example of what a subcontract will look like.

12. **Question**: Can you describe preferences for product and project approach?

Answer: Preferences for product and project approach may be found in the Objective section of Appendix A – Statement of Work. For example, preferences for product(s) can be found in the statement: "… *residential building-integrated products that incorporate the onsite generation of solar electric and solar thermal energy – products <u>on the path</u> to producing 100% of the ZEH's electric needs, 100% of its hot water needs and 100% of its space conditioning needs*." Preferences for project approach may be found in the next sentence: *"This "next generation" of <u>onsite</u> renewable energy generation products must also be developed in cooperation with the U.S. construction industry, in order that they*

can be marketed successfully to the new-home construction market." Further preferences for project approach may also be found in the Scope of Work section in Appendix A.

13. **Question**: Is there a preference for the development and demonstration of a combined solar electric and hot water product? That is, do you want singular products that produce both electricity and hot water from the same device -- a PV device that is also a thermal collector?

Answer: The bolded statement found in the Objective section of Appendix A – Statement of Work: ""… *residential building-integrated products that incorporate the onsite generation of solar electric and solar thermal energy – products <u>on the path</u> to producing 100% of the ZEH's electric needs, 100% of its hot water needs and 100% of its space conditioning needs*" contains four important concepts that should be understood by the offeror. First, the phrase "*residential building-integrated products*" indicates the market and type of products that are desired by DOE/NREL. Second, the phrase "*onsite generation of solar electric and solar thermal energy*" indicates a desire for products that address <u>both</u> solar electric energy generation <u>and</u> solar thermal energy generation. Third, the phrase "*producing 100% of the ZEH's electric needs, 100% of its hot water needs and 100% of its space conditioning needs*" indicates the desire to address not only electricity and hot water loads, but also space conditioning needs. Finally, the underlined phrase "*<u>on the path</u>*" indicates the understanding that not all proposed products will initially achieve 100% of the previous two desires, but rather will be intermediate steps to meeting the ultimate goal of the Zero Energy Homes Energy Supply Systems Integration project, i.e., to develop the next generation of advanced building products that can generate 100% of the electric needs, 100% of the water heating needs, and 100% of the space conditioning needs of a Zero Energy Home.

14. **Question**: Are products that only produce electricity acceptable? Are they encouraged?

Answer: Products that only produce electricity are intermediate steps on the path to meeting the ultimate goal of the Zero Energy Homes Energy Supply Systems Integration project, i.e., to develop the next generation of advanced building products that can generate 100% of the electric needs, 100% of the water heating needs, and 100% of the space conditioning needs of a Zero Energy Home. Therefore, products that only produce electricity are acceptable; however, they are not encouraged.

15. **Question**: Does NREL expect proposers to have teams composed of solar electric, solar hot water, and energy efficiency companies?

Answer: As stated in the Background section of Appendix A – Statement of Work, *"…DOE and NREL are interested in awarding phased subcontracts to industry and/or university teams for research and development of building components that are integrated with solar and other renewable energy generation technologies."* Section 7a on page 3 of the Request for Proposals indicates the type of qualifications and experience that will be used to evaluate the team that is proposed. Qualified solar electric, solar hot water, and energy efficiency companies could help in meeting a number of these criteria; however, they are not a sole prerequisite for a team.